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ABSTRACT

Franklin Pierce College (New Hampshire) has established an information technology (IT) major which combines courses from the computer science, graphic communications, and mass communication disciplines to conform more closely to the reality of technology in the late 1990s. Information technology brings together tools from these disciplines for the implementation of well designed, robust electronic communication and represents the continuing convergence of technology in the communications and computing fields. The IT major includes computer literacy, graphic design, data communications, media policy, and economics to provide technical as well as conceptual and managerial expertise. The IT major is interested in the rich implementation of emerging technology. Notable features of the IT major include: (1) the dominance of the set of core courses allows tight control over subject matter for students in the major; (2) IT bridges the gap between existing majors; (3) the program is built on existing, popular programs and therefore can be introduced with little extra expenditure; (4) the major will provide the basis for a respectable application to graduate school; (5) the minor provides exposure to different aspects of information technology; and (6) the program is based on a new concept of education in information technology, so comparison with programs at other schools is not possible. (SWC)

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# Creating an Undergraduate InfoTech Major

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At Franklin Pierce College, a small, independent liberal arts college in rural New Hampshire, many think we are lucky to have computers at all, let alone majors and minors in Computer Science and other versions of computer-related education.* But there has been development in this area for some time at the college. A Computer Science program has been in place for four years, which was preceded by a technology-related program in the Business Division. The Computer Science major has been one of the smaller ones at the college and development of new courses has been limited by technical resources, but we have a certain staying power. We also have strong mass communication and graphic communications programs, which have their own technology- related courses. Other majors also use technology and have computer-related courses. We have therefore been, in our own small way, "robust."

There has been a growing awareness, however, that all of our students' needs associated with technology are not being met, and that all of the talk at the college of developments in technology have not been reflected in courses and programs. It is also true that "Computer Science" as a discipline does not respond to the needs of those student who are interested more in applications development than in research, and that other disciplines that use technology do not have comprehensive programs in the field. We therefore face a dilemma that derives from our own internal need for growth as well as changes that have occurred in the technology industry itself. Technology keeps changing, and our response must also change.

We have therefore embarked on a new program in what we are calling Information Technology. It is not going to be all new, however, because of budgetary restrictions and also because we have already been doing much of what is needed, albeit for other purposes. However, it is already clear that new directions are going to be taken by this program, not only in content, but also in the ways that we as an institution plan for the future.

The developments at an institution reflect the history of the institution, and the newly implemented program attempts to make use of three established disciplines - Computer Science, Graphic Communications, and Mass Communication - to conform more closely to the reality of technology in the late nineties. Information Technology brings together tools from these disciplines for the implementation of well designed, robust electronic communication. It represents the continuing convergence of technology in the communications and computing fields.

The new IT major consists of a set of nine core courses, taken from already developed courses in Computer Science, Mass Communication and Graphic Communications. It includes computer literacy as well as graphic design. It includes data communications but also media policy and economics. All of these are appropriate areas of study for someone in Information Technology,

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because technical as well as conceptual and managerial expertise are necessary. Beyond the core three electives are required, and these will come from a large group of other courses, not necessarily limited to the three "parent" disciplines.

And IT ends up being different from the parent disciplines. It is different from Computer Science in that it is not interested in development of emerging technology so much as it is interested in the rich implementation of emerged technology, and its focus is more on connectivity than on the individual machine. It is different from Mass Communication because it is more technology-driven than Mass Communication in general. In a sense IT is a subset of Mass Communication; but it is also qualitatively different in than Mass Communication traditionally concerns itself with reaching the largest number of people possible, whereas IT focuses on reaching individuals with advanced technology.

It is different from Graphic Communications in that it is an extension of that field, based largely on the shift of the methods in the field because of new technology, for instance, the digitization of photography. But you don't just change the technology and do the old thing: the change demands creative new approaches to old problems.

Information Technology will allow students to develop an understanding of new ways of communication, which include issues of media and computing. Areas of concern include graphics for broadcast and cable television, graphic art for promotional and marketing tools for the advertising industry, animation for film and video, special effects for video and film, and animation for video games. It is a new field that has growing interest among potential students, and it seems that there is little development at the moment in this area. The time is therefore ripe to start this program.

Because the program reflects the history of the institution, an IT program at another institution will probably look quite different from the one at Franklin Pierce. Certain paradigms perhaps emerge here: the IT program at a liberal arts college, the one at a large research institution, the one at a community college, the one at a technological institution. They might come to be quite similar, however. Our own present plans call for new courses that will be IT courses, not borrowed from other programs. This includes a course in multimedia, for example. If this type of development becomes stronger, the different kinds of programs will grow to be similar.

While new courses will be needed, at first only four, easy- to-implement additions to the curriculum are planned. The first is a new freshman course, IT102 Information Technology. This course builds on the introductory knowledge gained in CS101 Introduction to Computers, our popular version of the computer literacy course, and expands that knowledge to include issues in graphic design and mass communications. We will do this through hands-on development as well as reading and discussing subjects in the field. Databases, Internet, including World Wide Web, HTML and Home Page development, information technology tools and formats, multimedia, the platform issue, non-linear audio and video editing and graphic animation, and product evaluation: these are all topics for the course.

One of the interesting aspects of this course is that no one of the present faculty at the college is capable of teaching it. It is quite possibly true that very few faculty at any college in the land could cover this material in the traditional way. Both excited and challenged by this, we are therefore

faced with a team effort, and each member of the team will hopefully learn the alien materials of the course in time to teach it independently next time around.

The next course is IT390 or 490, Internship in Information Technology, which will provide the opportunity to gain experience in the technology development of profit and non-profit organizations. The internship is taken after most of the major or minor requirements have been met, and in no case before the second semester of the junior year. An agreement is drawn up and approved by the student, the proposed employer, the internship advisor and Division Chair. Internships require a minimum of 55 hours of on-the-job work for each hour of credit. Evaluation is made by the internship advisor in consultation with the employer. The course will help test the marketability of the new program, and we are looking forward to the interaction with employers of our students.

We are also allowing from the outset the possibility of independent study, in order to provide an opportunity to explore an area of study not included in the catalogue listing of approved courses. The topic of an Independent Study should be selected and carefully designed by the student and faculty sponsor, and must meet with the approval of the Division Chair. Normally, the student will be expected to have a cumulative grade point average of 3.0 and possess the appropriate background and interest to pursue the proposed area of study.

Finally, we are planning for a senior seminar in Information Technology, which will be a capstone course. Each member of the class will be expected in the first weeks to give a presentation to the group on what she/he has seen as the most interesting/valuable subject matter in Information Technology. The presentation will provide the groundwork for further independent investigation for that student for the rest of the semester. A proposal for this term-long investigation will be submitted and approved.

While students are working independently on these projects, the class as a group will investigate Information Technology in two areas: first, what are the hot topics in the field, which show the most potential for growth and impact in the coming years; and second, what are the coming social implications of IT? These investigations will take the form of readings, discussions, site visits, films, etc. The last few weeks of the semester will be given over to large-scale presentations by students of the investigations they have been doing all semester long. Hopefully this format will provide everyone with a next step in the field and an integration of the various subject matters in the program.

The program has certain features, which should be noted here:

1. The dominance of the set of core courses allows a tight control over subject matter for all students in the major; it is felt that this necessary, given that the major is multidisciplinary, and subject to wandering.

2. IT bridges the gap in existing majors that has been felt for some time. The convergence of computer science and communi- cations is not insignificant in our time. This program is a positive response to a quickly growing industry that provides exciting employment to creative, educated artists/communicators who have solid technical training.

3. The program can be introduced with little extra expenditure. Because it is built on existing, popular programs, it is a restructuring rather than a startup.

4. The major covers most of the bases for a respectable application to graduate school, without being impossible or impractical for others.

5. The minor provides an exposure to the different aspects of information technology, and should prove valuable as an applications area in other majors.

6. This program is based on a new concept of education in information technology; therefore, heavily researched comparison with programs at other schools is not possible. However, it is interesting that we are at the forefront here, leading rather than following.

It is important at this point in creating a new, forward- looking program that we reexamine the traditional ways that an academic program fits into a college. Because Information Technology influences virtually all aspects of the life of the institution, it is inappropriate to think of an IT program as simply constituting a major and a minor, particularly at a time of tight budgets and the resulting need to service widely on limited resources. We are trying not to think of the new program as simply a structure within which the only activity consists of students taking courses and faculty developing expertise in isolation from other activities.

It must be larger than that. We are at the moment looking into ways that the IT program connects to the ubiquitous needs for technology-based training and development throughout the college. There is also consciousness raising about technology that is necessary - and not just for students in the classroom - which includes awareness of new developments and creative use of their applications but also the societal implications of all of these developments. The old path of development seems therefore inappropriate to our new program.

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* I wish to acknowledge the contributions of my colleagues, mainly Ray Oakes of Mass Communication and Richard Block of Graphic Communications, in the development of the program discussed here.